**Blood Pressure Experiment**

**Research Question:**

How does blood pressure change in isometric training as compared to isotonic training?

**Hypothesis:**

If blood pressure rises more when a person is performing exercises involving movement then the blood pressure will be higher in isotonic training as compared to Isometric training.

**Materials:**

-blood pressure sensor

-pen & paper for any observations

-data logger

-computer

-gym mat

-wall

-2 or more volunteers

**Independent Variable:** Type of exercise

**Dependent Variable:** Blood pressure

**Control Group:** Blood pressure while resting

**Experimental group:** Blood pressure while/after resting

**Controlled Variables:** Age of volunteer, amount of time for each exercise, exercise done, resting time between exercises

**Procedure:**

1. Explain to the volunteers that they will be performing 4 different exercises each for a certain amount of time while their blood pressure is being collected.
2. Connect the data loger and blood pressure sensor to the computer and power supply and make sure everything is working.
3. Have the first volunteer sit while wearing the sensor for 30 seconds then press “collect.” Let the sensor run for 30 seconds and record the average resting blood pressure into the table.
4. Now have the same volunteer stand still and record the average standing blood pressure.
5. The same volunteer will now start the first exercise (sit-ups) for 30 seconds while the average blood pressure is recorded
6. Let the volunteer rest for 30 seconds then repeat the exercise for 45 seconds and record the average blood pressure
7. Repeat steps 5 & 6 for each of the chosen times, letting the volunteer rest for the same amount of time that they have exercised each time (ex. Exercise for 1 minute then rest for 1 minute then move on)
8. Let the same volunteer rest until the blood pressure goes back to the original sitting pressure
9. Repeat steps 3-8 with the same volunteer for push-ups
10. Repeat steps 3-8 with the same volunteer for the wall sit
11. Repeat steps 3-8 with the same volunteer for the plank
12. When the first volunteer has completed the first trial for all the exercises move on to the next volunteer and repeat steps 3-11
13. Once all the volunteers have repeated the first set of trials go back to step 3 and repeat everything for trial 2
14. Go back to step 3 and repeat everything for trial 3
15. Finally, graph the collected data and try to draw an accurate conclusion

For the wall sit the volunteer must have their back upright against the wall and their knees bent at a 90 degree angle and must hold this position for the entire course of the given time. For the plank the volunteer must get into the push-up position with their back straight and hold it for the entire length of time given.

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| **Exercise, Isotonic** | Blood Pressure Resting | | Pressure After 30 sec. Exercise | | | Pressure After 45 sec. Exercise | | | Pressure After 1 min. Exercise | | | Pressure After 1min. 15 Exercise | | | Blood Pressure at End |
| Trial | Sit | Stand | 1. | 2. | 3. | 1. | 2. | 3. | 1. | 2. | 3. | 1. | 2. | 3. |  |
| Sit-ups |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Push-ups |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Exercise, Isometric** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Wall sit |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Plank |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |